U.S. Health System Performance: A National Scorecard

The United States would have to improve its performance on key indicators by 50 percent or more to reach benchmark rates.

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ABSTRACT: This paper presents the findings of a new scorecard designed to assess and monitor multiple domains of U.S. health system performance. The scorecard uses national and international data to identify performance benchmarks and calculates simple ratio scores comparing U.S averages to benchmarks. Average ratio scores range from 51 to 71 across domains of health outcomes, quality, access, equity, and efficiency. The overall picture that emerges from the scorecard is one of missed opportunities and room for improvement. The findings underscore the importance of policies that take a coherent, whole-system approach to change and address the interaction of access, quality, and cost. [Health Affairs 25 (2006): w457–w475; 10.1377/hlthaff.25.w457]

THE UNITED STATES HAS MANY of the world's best-equipped hospitals and most highly specialized physicians. At 16 percent of gross domestic product (GDP), U.S. health spending is double the median of industrialized countries and since 2000 has been growing more rapidly than before.[1] Yet the United States is the only major industrialized country that fails to guarantee universal health insurance; coverage in this country is deteriorating, leaving millions without affordable access to care.[2] The U.S. health system also is not the best on quality of care, nor is it a leader in health information technology (IT).[3]

To delineate the status of U.S. health care and opportunities to improve, we have developed a national scorecard spanning health outcomes, quality, access, efficiency, and equity in one report. Thus, the scorecard, which was designed to assess and monitor all key dimensions of performance in relationship to benchmarks and over time, provides a unique whole-system view. Benchmarks and targets for improvement are based primarily on levels achieved internationally or within the United States.

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Study Methods

With guidance from the Commonwealth Fund Commission on a High Performance Health System and input from leading experts, the scorecard includes key indicators drawn from efforts of public, professional, and other national entities plus new analyses. Criteria for indicator selection focused on sentinel or whole-system measures that capture key areas where improvement could make a major difference for the public, where information is available from international or national databases, and where the potential exists for time-trend analyses. In total, the scorecard includes thirty-seven scored indicators, many of which are composites. The indicator set includes thirteen from new data analyses and composites developed for the scorecard; the remainder represent an array from past research and ongoing efforts to track quality performance.

■ **Indicator domains.** The analysis organizes indicators into five broad domains: health outcomes, quality, access, efficiency, and equity. Within the domain of quality, there are four clusters of indicators: getting the right care (effective care); coordinated care; safe care; and patient-centered, timely care. Access includes two clusters: universal participation and affordability of coverage and care. We assigned indicators of overuse or waste to "efficiency."

Except for coordinated care, quality follows the framework developed by the Institute of Medicine (IOM).[4] We broadened "quality" to include coordination, in light of its critical link to effective, safe, and efficient care.[5] To take a whole-system view, the scorecard emphasizes composites and develops new indicators that address efficiency—that is, joint performance on quality and cost.[6]

■ **Benchmarks.** The report scores U.S. national performance relative to benchmarks, with a maximum score of 100. In general, benchmarks reflect the performance achieved by top-performing groups, but not "perfection." For each indicator, we identified the benchmark rate based on rates achieved by top countries or the top 10 percent of U.S. states, hospitals, health plans, or other providers. The choice of benchmarks reflects the specific indicator and availability of data. For example, for hospital clinical care, the benchmark is the best hospitals, but for potentially preventable admissions, the benchmark is the top 10 percent of states or regions. Where patient data were available only at the national level, we compared national rates with the experiences of high-income, insured people, choosing the benchmark group least likely to face barriers because of costs.

Four access benchmarks are targets that reflect logical policy goals, such as aiming for 100 percent of the population to be adequately insured.[7] We also used targets for two quality indicators—adults getting all basic preventive care and mental health care—since national rates even for high-income groups came to barely half receiving care according to guidelines. For these we set "stretch targets" of 80 percent to allow for less-than-perfect scores and still aim for major improvement.

■ **Scoring.** To score, we calculated simple ratios of U.S. national averages com-

pared to benchmarks. Where higher rates would indicate a move in a positive direction, we divided the national average by the benchmark. Where lower rates would indicate a positive direction—such as lower mortality or error rates—we compared the benchmark (lower rate) to the U.S. average. To summarize scores by domain, we averaged indicator ratios.

■ **Risk ratios.** For equity, we used the percentage of the group at risk (for example, the percentage not receiving recommended care) to calculate risk ratios for selected indicators. The ratios compare rates for whites with those for blacks and Hispanics; high income with low income; and insured with uninsured.

Outcomes: Long, Healthy, And Productive Lives

An overarching goal for the health care system is its capacity to contribute to long, healthy, and productive lives. The scorecard includes five system-level indicators of health outcomes: two on potentially preventable mortality, one on life expectancy, and two on the prevalence of health conditions that limit the capacity of adults to work or children to learn (Exhibit 1). The average ratio score for the United States is 69 out of a possible 100, which reflects the extent to which U.S. health outcomes differ from those in other countries or vary across states.

An indicator of mortality from conditions amenable to health care, widely used in Europe, is deaths before age seventy-five from conditions that are at least partially preventable or modifiable with timely and effective health care. The United States ranked fifteenth out of nineteen countries on this indicator as of 1998, with a death rate more than 40 percent higher than the benchmark, which is the average of the three best countries (France, Japan, and Spain).

The United States ranked last on infant mortality out of twenty-three industrialized countries as of 2002, with rates more than double the average of the three leading countries (Iceland, Japan, and Finland). The United States tied for last with Portugal, Ireland, Denmark, and the Czech Republic on healthy life expectancy at age sixty. The U.S. ranking reflects shorter life expectancy and more years of life with poor health and disability.

Within the United States, there is wide variation across states on the percentage of working-age adults with health-related limits on their ability to work or do other activities and in the percentage of children missing eleven or more days from school because of illness or injury.

Quality Of Care

High-quality care means care that is "right" (effective), well-coordinated, safe, patient-centered, and timely. On multiple quality indicators there are substantial spreads between the top and bottom groups of hospitals, health plans, or states (Exhibits 2 and 3). Hence, even moving the bottom of the distribution up to the national averages would yield substantial net gains.

■ **Getting the right care.** Across five indicators for getting the right care, the

EXHIBIT 1
Performance Indicators For The U.S. Health Care System: Long, Healthy, And Productive Lives (Outcomes)

| Dimension and indicator | U.S. national rate | Range of performance | | Benchmark | Score: ratio of U.S. to benchmark |
		Comparison group	(Bottom group–top group)		
Mortality amenable to health care (deaths per 100,000 population)	115	Countries	(130–80)[a]	80	<u>70</u>
Infant mortality (deaths per 1,000 live births)	7.0	Countries	(6.0–2.7)[b]	2.7	<u>39</u>
Healthy life expectancy at age 60 (years) (average of 2 ratios)					<u>87</u>
Men	15.3	Countries	(14.4–17.4)[b]	17.4	88
Women	17.9	Countries	(17.2–20.8)[b]	20.8	86
Adults (ages 19–64)—limited in any activities because of physical, mental, or emotional problems (percent)	14.9	States	(20.1–11.5)[c]	11.5	<u>77</u>
Children—missed 11 or more school days due to illness or injury (percent)	5.2	States	(8.1–3.8)[c]	3.8	<u>73</u>
Long, healthy, and productive lives (outcomes) dimension score					**69**

SOURCES: See the online technical appendix, http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2.
NOTES: Range of performance shows the rates for the bottom (worst) and top (best) group as footnoted. Benchmark is the top group rate. Underlined ratios were used to determine the dimension scores.
[a] Average bottom or top three of nineteen countries.
[b] Average bottom or top three of twenty-three countries.
[c] Average bottom or top 10 percent of states.

United States averages 71 percent of the benchmark rates, with ratio scores ranging from 39 to 89 (Exhibit 2). Based on patients' reports, just about half of adults receive all recommended clinical screening tests and preventive care according to U.S. national guidelines.[8] Only half of adults and 59 percent of children needing mental health care receive treatment. Rates are only 15 percent better for high-income adults. In general, the scorecard results confirm those of a medical-record-review study that found low rates of receipt of recommended care for adults.[9]

For children, receipt of basic vaccines and annual preventive medical and dental care varies greatly across states. As a result, national averages are well below the benchmark top 10 percent of states. National average rates of chronic disease control—using diabetes and hypertension as key indicators—also fall well below benchmark rates achieved by the top decile of health plans. Even within managed care plans, there is a wide spread in performance.

Hospitals vary in their provision of care according to basic clinical guidelines for heart attacks, congestive heart failure (CHF), and pneumonia. Although top-performing hospitals reached 100 percent adherence, hospitals delivered recommended care only 84 percent of the time on a composite measure of ten clinical

processes that are reported to Medicare in exchange for full payment updates.[10]

■ **Coordinated care.** Coordinating care over time and sites, especially for those with complex conditions, can help assure that patients receive appropriate follow-up treatment and minimize the risk of errors or complications. Having a doctor who is available and serves as a central source of primary care and referral facilitates care continuity and coordination. Yet nearly one-third of adults and more than half of all children do not have such a primary care "medical home" (Exhibit 2).

Coordination of care is particularly critical during transitions following hospital discharge. Yet hospitalized patients in the United States are less likely to have medications reviewed when discharged than is the case in several other countries. Across the United States, patients discharged from the hospital with CHF receive written discharge instructions only 50 percent of the time, on average, and there is an eighty-percentage-point spread between the top and bottom 10 percent of hospitals and a forty-percentage-point spread between the top and bottom 10 percent of states (64 percent versus 26 percent, data not shown). Patients hospitalized for mental health conditions often do not receive follow-up care within thirty days of

EXHIBIT 2
Performance Indicators For The U.S. Health Care System: Quality—Getting The Right Care And Coordinated Care

Dimension and indicator	U.S. national rate (%)	Range of performance		Benchmark (%)	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group) (%)		
Adults—received recommended screening and preventive care	49	Insurance	(31–52)[a]	80*	61
Children—received recommended immunizations and preventive care (average of 2 ratios)					85
Received all recommended doses of five key vaccines	79	States	(71–89)[b]	89	89
Received both preventive medical and dental care visits	59	States	(48–73)[b]	73	81
Needed mental health care and received treatment (average of 2 ratios)					66
Adults	47	Income	(42–54)[c]	80*	59
Children	59	States	(47–74)[b]	80*	73
Chronic disease under control (average of 2 ratios)					61
Adults with diagnosed diabetes— HbA1c level <9%	74	Health plans	(23–89)[d]	89	83
Adults with hypertension—blood pressure <140/90 mmHg	29	Health plans	(48–75)[e]	75	39
Hospitalized patients—received recommended care for AMI, CHF, and pneumonia (composite)	84	Hospitals	(75–91)[f]	100[f]	84
Getting the right care dimension score					**71**

EXHIBIT 2
Performance Indicators For The U.S. Health Care System: Quality—Getting The Right Care And Coordinated Care (cont.)

Dimension and indicator	U.S. national rate (%)	Range of performance		Benchmark (%)	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group) (%)		
Adults (ages 19–64)—have accessible primary care provider	66	Age, income, and insurance	(38–84)[g]	84	<u>79</u>
Children—have "medical home"	46	States	(36–60)[b]	60	<u>77</u>
Care coordination at hospital discharge (average of 3 ratios)					<u>70</u>
Hospitalized patients with new Rx— medications were reviewed at discharge	67	Countries	(67–86)[h]	86	78
Heart failure patients—received written instructions at discharge	50	Hospitals	(9–87)[i]	87	58
Follow-up within 30 days after hospitalization for mental health disorder [j] (average of health plans)					74
Private plans	76	Health plans	(65–86)[k]	86	88
Medicare plans	61	Health plans	(39–80)[l]	86[l]	70
Medicaid plans	54	Health plans	(22–81)[m]	86[m]	63
Nursing homes: hospital admissions and readmissions among residents (average of 2 ratios)					<u>64</u>
Hospital admissions	16	States	(21–9)[n]	9	57
Readmissions	12	States	(16–8)[n]	8	72
Home health: hospital admissions	28	Agencies	(47–17)[o]	17	<u>62</u>
Coordinated care dimension score					**70**

SOURCES: See the online technical appendix, http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2.
NOTES: All rates are rounded. Range of performance shows the rates for the bottom (worst) and top (best) group as footnoted. Benchmark is the top group rate unless marked with an asterisk to indicate target rate. Ratios use values to the nearest decimal point. AMI is acute myocardial infarction. CHF is congestive heart failure. Underlined ratios were used to determine the dimension scores.
[a] Uninsured or insured all year.
[b] Average bottom or top 10 percent of states.
[c] Less than 100 percent of the federal poverty level or 400% or more of the federal poverty level.
[d] Tenth percentile Medicaid plans or ninetieth percentile Medicare plans.
[e] Tenth percentile Medicaid plans or ninetieth percentile private plans.
[f] Tenth or ninetieth percentile hospitals; benchmark is top hospitals.
[g] Uninsured adults under age sixty-five or high-income elderly.
[h] Worst or best of six countries.
[i] Tenth or ninetieth percentile hospitals.
[j] Average of National Committee for Quality Assurance (NCQA) health plans; no national data available.
[k] Tenth or ninetieth percentile private plans.
[l] Tenth or ninetieth percentile Medicare plans; benchmark is ninetieth percentile private plans.
[m] Tenth or ninetieth percentile Medicaid plans; benchmark is ninetieth percentile private plans.
[n] Ninetieth or tenth percentile states.
[o] Average bottom or top 25 percent of agencies.

discharge. On both CHF and mental illness indicators, there is a gap of twenty to thirty percentage points between national averages and rates achieved by the top group of hospitals or health plans. These shortcomings put patients at risk for

complications and readmissions and raise the cost of care.

Carefully managed transitions between hospital and nursing homes or home health settings combined with high-quality care in the latter two settings can prevent or minimize hospitalizations and rehospitalizations for long-term care patients. Yet, on average, one in six nursing home residents are hospitalized each year, and of those discharged from hospitals to nursing homes, 12 percent are readmitted within three months. These average rates are 50 percent higher than those achieved by the five best states, with a two- to nearly threefold variation across states. National rates of home health patients admitted to the hospital are also well above the benchmark set by top-performing agencies.

An estimated 28 percent of readmissions from nursing homes and home health care agencies could be prevented.[11] Reductions of this magnitude would bring national rates nearer to rates achieved by the top-performing states, result in less disruption for vulnerable patients, and save money.

■ **Safe care.** Seven years after the publication of the IOM's *To Err Is Human*, the United States still lacks a reporting system to assess safety or to target areas for improvement.[12] Safety risks cut across care both in and out of the hospital (Exhibit 3).

In a six-nation survey, one-third of U.S. patients reported a medical mistake, medication, or lab test error in the past two years. It would take a one-third reduction in the U.S. rate to reach benchmark-country rates (Germany and the United

EXHIBIT 3
Performance Indicators For The U.S. Health Care System: Quality—Safe Care And Patient-Centered, Timely Care

Dimension and indicator	U.S. national rate	Range of performance		Benchmark	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group)		
Patients reported medical, medication, or lab test error (percent)	34	Countries	(34–22)[a]	22	65
Unsafe drug use (average of 3 ratios)					60
Ambulatory care visits for treating adverse drug effects (number per 1,000 population per year)	15	Regions	(19–11)[b]	11	71
Children—prescribed antibiotics for throat infection without a "strep" test (percent)	43	Health plans	(75–12)[c]	12	27
Elderly—used 1 of 33 inappropriate drugs (percent)	18	Regions	(20–15)[b]	15	83
Nursing home residents with pressure sores (average of 2 ratios)					67
High-risk residents (percent)	13	States	(18–8)[d]	8	60
Short-stay residents (percent)	19	States	(23–14)[d]	14	73
Hospital-standardized mortality ratios (actual to expected deaths)	101	Hospitals	(118–85)[e]	85	84
Safe care dimension score					**69**

EXHIBIT 3
Performance Indicators For The U.S. Health Care System: Quality—Safe Care And Patient-Centered, Timely Care (cont.)

Dimension and indicator	U.S. national rate	Range of performance		Benchmark	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group)		
Ability to see doctor when sick or need medical attention on same or next day (percent)	47	Countries	(36–81)[a]	81	<u>58</u>
Very/somewhat easy to get care after hours without going to the emergency room (percent)	38	Countries	(38–72)[a]	72	<u>53</u>
Doctor-patient communication: always listened, explained, showed respect, spent enough time (percent)	54	Health plans	(55–74)[f]	74	<u>74</u>
Adults with chronic conditions—given self-management plan (percent)	58	Countries	(37–65)[a]	65	<u>89</u>
Patient-centered hospital care (average of 3 ratios)					<u>87</u>
Staff managed pain well (percent)	70	Hospitals	(61–79)[g]	79	89
Staff always responded when needed help to get to the bathroom or pressed call button (percent)	63	Hospitals	(52–74)[g]	74	86
Staff always explained medicines and side effects (percent)	60	Hospitals	(49–70)[g]	70	86
Patient-centered, timely care dimension score					**72**

SOURCES: See the online technical appendix, http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2.
NOTES: All rates are rounded. Range of performance shows the rates for the bottom (worst) and top (best) group as footnoted. Benchmark is the top group rate. Ratios use values to the nearest decimal point. Underlined ratios were used to determine the dimension scores.
[a] Worst or best of six countries.
[b] Worst or best region.
[c] Ninetieth percentile Medicaid plans or tenth percentile private plans.
[d] Average bottom or top 10 percent of states.
[e] Average bottom or top 10 percent of hospitals.
[f] Tenth percentile Medicaid/private plans or ninetieth percentile Medicare plans.
[g] Tenth or ninetieth percentile hospitals.

Kingdom).

Visits to doctors for adverse drug events vary greatly across regions and have increased in the past five years. The percentage of elderly people prescribed one of thirty-three drugs listed as inappropriate has edged up since 2000, as has the percentage of children prescribed antibiotics for sore throats since 1998.

Among nursing home residents, inadequate care can result in pressure sores with risks of serious complications. It would take a 33 percent reduction in national pressure sore rates to reach the average level achieved by the top five states.

Hospital-standardized mortality ratios provide an overall indicator of hospital safety and quality used internationally and in the United States to target improve-

ment.[13] Based on 2000–2002 mortality rates for Medicare beneficiaries, there is a thirty-three-percentage-point spread between the risk-adjusted mortality ratios achieved in the best 10 percent of hospitals (lowest rate) and the bottom 10 percent.[14] If hospitals with observed mortality rates that are higher than expected brought deaths down to the levels that were expected given their patient mix, the improvement would translate into an estimated 17,000–21,000 fewer deaths per year. Reducing mortality rates to the level achieved by the top-performing group of hospitals (lowest 10 percent) would more than triple the number of lives saved.

■ **Patient-centered, timely care.** Patient-centered, timely care can increase adherence, improve care experiences, and promote more-efficient care. Compared to rates achieved in several other countries, U.S. patients are notably less likely to have rapid (same- or next-day) access to physicians when sick or to find it easy to get care after hours without going to the emergency room (ER) (Exhibit 3). These deficiencies are in turn associated with higher rates of ER visits for conditions that could have been handled by a regular physician if he or she were available.

Also, the percentage of U.S. patients reporting that their doctor always listens carefully, explains things clearly, shows respect, and spends enough time with them varies greatly across the country and by source of coverage. There are substantial differences between national rates and the level achieved by the top-performing group of health plans, based on data reported to the National Committee for Quality Assurance (NCQA), Medicare, and Medicaid.

Providing a self-management plan to patients with chronic diseases encourages them to take steps to control their conditions. Only three in five U.S. adults with chronic conditions report having such a plan (Exhibit 3).

In a pilot study, experiences of patients in 254 hospitals have been reported to the Agency for Healthcare Research and Quality's (AHRQ's) Consumers Assessment of Health Providers and Systems Hospital Survey (HCAHPS) benchmarking database. There is a spread of eighteen to twenty-two percentage points between the top- and bottom-performing groups of hospitals (tenth and ninetieth percentiles) on how well hospitals manage pain, explain medications and possible side effects, or respond when patients press call buttons or need help going to the bathroom.[15] Although patients' experiences in nursing homes are of critical public concern, no indicator exists to assess resident-centered care.

Access And Affordability

Studies repeatedly find that the single most important determinant of whether patients obtain essential health care is having health insurance.[16] With insurance premiums rising at higher rates than wages and consumer cost sharing up sharply, the affordability of insurance and care is of increasing concern to middle- and low-income families and employers.[17] In Exhibit 4, four of the five scorecard indicators of access and affordability are assessed against policy targets.

■ **Universal participation.** The scorecard includes two indicators for universal

EXHIBIT 4
Performance Indicators For The U.S. Health Care System: Access

Dimension and indicator	U.S. national rate (%)	Range of performance		Benchmark (%)	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group) (%)		
Adults (ages 19–64)—insured all year, not underinsured	65	Income	(32–83)[a]	100*	65
Adults—no access problem due to costs	60	Countries	(60–91)[b]	91	66
Universal participation dimension score					65
Families—spending <10% of income or <5% of income, if low income, on OOP medical costs and premiums	83	Income	(54–96)[c]	100*	83
Population under age sixty-five—living in states where premiums for employer-sponsored health insurance are <15% of nonelderly median household income	58	_[d]	_[d]	100*	58
Adults (ages 19–64)—no medical bill problems or medical debt	66	Income	(53–84)[e]	100*	66
Affordable care dimension score[f]					69
Overall access score					67

SOURCES: See the online technical appendix, http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2.
NOTES: All rates are rounded. Range of performance shows the rates for the bottom (worst) and top (best) group as footnoted. Items marked with an asterisk are the target rate. For access problems due to costs, benchmark is best country rate. OOP is out-of-pocket. Underlined ratios were used to determine the dimension scores.
[a] Less than 200 percent of the federal poverty level or 200 percent or more of poverty.
[b] Worst or best of five countries.
[c] Less than 100 percent of poverty or 400 percent or more of poverty.
[d] Not applicable.
[e] Less than 200 percent of poverty or 400 percent or more of poverty.
[f] Affordable care indicator scores refer to percentage of U.S. population meeting each threshold.

participation: adequate insurance and receipt of needed care. The insurance indicator tracks the percentage of adults who are adequately insured all year. Inadequate protection or being underinsured is defined as having expenses that exceed 10 percent of family income (5 percent for those with incomes below 200 percent of the federal poverty level) or being exposed to deductibles that alone constitute 5 percent of income. As of 2003, sixteen million U.S. adults (ages 19–64) were underinsured, and sixty-one million adults (35 percent) were either uninsured or underinsured. In 2004, 40 percent of U.S. adults reported that they went without care because of costs during the year, a rate four times higher than in the United Kingdom, the benchmark country.

■ **Affordability.** Only 58 percent of the nonelderly population lives in a state where employer insurance premiums average less than 15 percent of this population's median household income. One-third of nonelderly adults report having prob-

lems with medical bills, collection agencies, or medical debt. High out-of-pocket and premium costs compared to income affect 17 percent of all nonelderly families. Time trends on all three indicators have been moving toward less affordability.[18]

Efficiency

An efficient care system seeks to maximize the quality of care and outcomes for the resources committed to health care, and it focuses on strategies that produce greater net value over time. The scorecard includes five clusters of efficiency indicators: evidence of overuse, inappropriate care, duplication, or waste; inefficient use of resources associated with poor access; regional variations in quality and costs; percentage of health expenditures on insurance administrative costs; and lack of information systems that foster efficiency. The findings point to opportunities to gain net value, including saving lives and reducing costs if the nation could move toward rates achieved by the highest-performing regions (Exhibit 5).

■ **Potential overuse, waste, and inappropriate care.** U.S. patients often report that records or test results were not available at the time of their appointment and that doctors unnecessarily repeated tests. In a six-nation survey, U.S. rates are two to three times the lowest-rate benchmark countries on both indicators.

EXHIBIT 5
Performance Indicators For The U.S. Health Care System: Efficiency

Dimension and indicator	U.S. national rate	Range of performance		Benchmark	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group)		
Potential overuse or waste (average of 3 ratios)					48
Duplicate medical tests: doctor ordered test that had already been done (percent)	18	Countries	(20–6)[a]	6	33
Test results or records not available at time of appointment (percent)	23	Countries	(23–11)[a]	11	48
Received imaging study for acute low back pain with no risk factors[b] (average of health plans)					62
Private plans (percent)	25	Health plans	(33–18)[c]	15[c]	58
Medicaid plans (percent)	22	Health plans	(28–15)[d]	15	66
Went to ER for condition that could have been treated by regular doctor (percent)	26	Countries	(26–6)[a]	6	23
Hospital admissions for ACS conditions (average of 2 ratios)					57
National ACS admissions (per 100,000 population) (average of 3 conditions)					49
Congestive heart failure	498	States	(631–258)[e]	258	52
Diabetes	241	States	(299–137)[e]	137	57
Pediatric asthma	188	States	(297–74)[e]	74	39
Medicare ACS admissions (per 10,000 beneficiaries)	771	Regions	(1,043–499)[f]	499	65
Medicare hospital 30-day readmission rates (percent)	18	Regions	(22–14)[f]	14	75

EXHIBIT 5
Performance Indicators For The U.S. Health Care System: Efficiency (cont.)

Dimension and indicator	U.S. national rate	Range of performance		Benchmark	Score: ratio of U.S. to benchmark
		Comparison group	(Bottom group–top group)		
Medical annual costs of care and mortality for AMI, hip fracture, and colon cancer (average of 2 ratios)					88
Resource costs (annual Part A and Part B $)	26,829	Regions	(29,047–23,314)[f]	23,314	87
One-year mortality rate (percent)	30	Regions	(32–27)[f]	27	90
Medicare annual costs of care for chronic diseases: diabetes, CHF, COPD (Part A and Part B $) (average of 4 ratios)					68
All three conditions	31,792	Regions	(43,973–20,960)[f]	20,960	66
Diabetes + CHF	18,461	Regions	(27,310–12,747)[f]	12,747	69
Diabetes + COPD	13,188	Regions	(18,024–8,872)[f]	8,872	67
CHF + COPD	22,415	Regions	(32,732–15,355)[f]	15,355	69
Percent of national health expenditures spent on health administration and insurance	7.3	Countries	(5.9–2.0)[g]	2.0	28
Physicians using EMRs (percent)	17	Countries	(7–80)[h]	80	21
Efficiency dimension score					51

SOURCES: See the online technical appendix, http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2.
NOTES: All rates are rounded. Range of performance shows the rates for the bottom (worst) and top (best) group as footnoted. Benchmark is the top group rate. Ratios use values to the nearest decimal point. ER is emergency room. ACS is ambulatory care–sensitive. AMI is acute myocardial infarction. CHF is congestive heart failure. COPD is chronic obstructive pulmonary disease. EMR is electronic medical record. Underlined ratios were used to determine the dimension scores.
[a] Worst or best of six countries.
[b] Average of National Committee for Quality Assurance (NCQA) health plans; no national data available.
[c] Ninetieth or tenth percentile private plans; benchmark is tenth percentile Medicaid plans.
[d] Ninetieth or tenth percentile Medicaid plans.
[e] Average bottom or top 10 percent of states.
[f] Ninetieth or tenth percentile regions.
[g] Average bottom or top three of eleven countries.
[h] Average bottom or top three of nineteen countries.

Within the United States, the NCQA has begun tracking potential overuse or inappropriate care by expanding Health Plan Employer Data and Information Set (HEDIS) measures to include ordering of imaging tests for patients with lower back pain with no apparent risk factors. Among both private and Medicaid plans, the average rates of potentially inappropriate testing are 50 percent higher than are those for the lowest 10 percent of health plans.

■ **Access and efficiency.** Lack of availability of physicians when a patient is sick or in need of after-hours care can result in a visit to a hospital ER. Based on a cross-national survey in six nations asking patients about ER use for conditions that could have been seen by a regular doctor if available, it would require nearly an 80 percent reduction in U.S. rates to reach rates achieved by Germany and New Zea-

land, the benchmark countries. Within the United States, ER use rates for conditions that could have been cared for by regular doctors were significantly higher for uninsured, low-income, and minority patients.

The substantial variation across the United States in admissions for ambulatory care–sensitive (ACS) conditions points to hospitalization costs that are potentially preventable with improved primary or ambulatory care. There is a two- to threefold spread between states with the lowest and highest rates of ACS admissions for asthma, diabetes, and CHF and among hospital regions for all ACS admissions for Medicare beneficiaries. Based on estimated national costs for all ACS admissions, bringing rates down by 10–20 percent would amount to a savings of $4–$8 billion per year.[19] These gains do not count the gains from reduced sick days, improved school attendance, and productivity. For Medicare, bringing ACS admission rates down to levels achieved by the top quartile or decile of hospital regions would save $2.4–$3.5 billion per year.[20]

■ **Variations in quality and costs.** High-quality hospital care combined with effective discharge planning and transition care can prevent readmissions. On average, 18 percent of Medicare beneficiaries hospitalized with one of several specified conditions were readmitted to the hospital within thirty days of discharge, a rate 30 percent higher than in the lowest 10 percent of states.[21] Readmission rates in the highest 10 percent of hospital regions were more than 50 percent higher than those of the lowest regional group. Bringing all readmission rates down to levels achieved by the lowest-rate regions would amount to $1.9 billion in annual savings for Medicare.[22]

Analysis of Medicare data on quality and costs of care for acute myocardial infarction (AMI), hip fracture, and colorectal cancer (with resection) reveals substantial variations in one-year, risk-adjusted mortality rates following the initial hospital admission and in resource use over the course of a year. The analysis used two indices to identify hospital regions in the top-performance quartile on both quality (annual mortality) and costs. The high-performing regions have fewer physicians involved in care, greater reliance on primary care, lower rates of hospital readmissions, and less extensive use of hospital and intensive care services.[23] If the United States as a whole were able to reach the level of higher survival and lower cost achieved by regions in the top quartile for both indices, the nation could save 8,400 lives and reduce annual Medicare spending by $900 million for the three conditions.

Medicare annual payments for patients with three chronic conditions—diabetes, chronic obstructive pulmonary disease (COPD), and CHF—also vary widely across regions. Annual total Medicare costs for beneficiaries with at least two of these conditions in the lowest-cost regions (bottom 10 percent) are one-third less than the national average. As shown in Exhibit 5, for each of the chronic care combinations, there is twofold or greater variation in cost between the lowest- and highest-cost regional groups.

■ **Insurance administrative costs.** U.S. private health insurance has complex

benefit and cost-sharing designs, and there is much churning in enrollment. As a percentage of national health spending, U.S. insurance administrative costs are more than three times those of countries with the most integrated insurance systems. U.S. rates are also 20–30 percent higher than rates in Germany and Switzerland, two countries with relatively complex public-private insurance systems (7.3 percent in the United States versus 5.6 percent in Germany and 4.8 percent in Switzerland).[24]

■ **Information systems to support efficient care.** Well-integrated electronic information systems have the capacity to improve the delivery of care, reduce errors, avoid duplication, and provide a mechanism to track and assess care. Fewer than one-fifth of U.S. physicians report routine use of electronic medical records (EMRs), compared with 60–90 percent in leading countries. Although the share of U.S. doctors with full or partial EMR use increased to nearly one in four in 2005, U.S. rates are still well below those of other industrialized nations.[25] Spread of health IT to hospitals, such as EMRs and computerized physician order entry (CPOE) systems, has also been limited.[26] Furthermore, recent studies find that most U.S. physicians cannot easily generate lists of patients by diagnoses or medications they are taking, nor do they have alert systems or prompts for drug interactions. Fewer than one-fifth have access to clinical outcomes data.[27]

Equity

National policy statements, including the Healthy People 2010 targets, have made reducing and eliminating disparities in U.S. health care a top priority. The scorecard documents major inequities in health, quality, access, and efficiency dimensions (Exhibit 6). Disparities are widest in the paired contrasts by income or insurance, with an average 34 percent gap between uninsured and insured populations and a 38 percent gap between low-income and high-income populations. On multiple indicators, it would require a 50 percent or greater improvement in rates among the low-income or uninsured to equal the experience of high-income or insured groups. Living in low-income communities also is associated with disparities. Cancer statistics demonstrate systematically lower five-year survival for whites, blacks, and Hispanics in high-poverty geographic areas.

Also on multiple indicators, rates for Hispanics and African Americans are higher than rates for whites, with particularly wide disparities in getting the right timely, patient-centered care and health insurance. On average, it would require a 20 percent decrease in Hispanics' risk rates to reach the levels of whites. Overall, gaps for African Americans tend to be equally wide or wider, including much higher mortality rates than for whites. These inequities in part reflect lower incomes and less access to insurance. Insured higher-income populations are generally at lower risk of poor access or quality, regardless of race and ethnicity.

Compared to benchmark populations, each of the vulnerable groups is less likely to receive preventive care according to clinical guidelines, more likely to wait for care when sick, and more likely to report communication difficulties. Low

EXHIBIT 6
Performance Indicators For The U.S. Health Care System: Equity

Dimension and indicator	White compared to black (%)	White compared to Hispanic (%)	High income compared to low income (%)	Insured compared to uninsured (%)
Infant mortality	42	100	63	_a
Adults (ages 19–64)—limited in any activities because of physical, mental, or emotional problems	100	100	46	_a
Children—missed 11 or more school days due to illness or injury	100	100	51	_a
Cancer five-year survival	82	97	82	_a
Coronary heart disease— and diabetes-related deaths	64	86	29	_a
Long, healthy, and productive lives score	**77**	**97**	**54**	_a
Older adults—did not receive recommended screening and preventive care	85	77	80	76
Children—did not receive recommended immunizations and preventive care	77	75	58	57
Needed mental health care and did not receive treatment	74	64	82	56
Untreated dental caries	50	50	43	_a
Chronic disease not under control	97	92	93	66
Diabetics—did not receive HbA1c, retinal, and foot exams	98	72	72	60
Getting the right care score	**80**	**72**	**71**	**63**
Patients reported medical, medication, or lab test error	67	100	94	100
AHRQ patient safety indicators	73	94	96	94
Nursing home residents with pressure sores	79	87	_a	_a
Safe care score	**73**	**94**	**95**	**97**
6+ days to see doctor when sick or need medical attention	69	65	52	47
Doctor-patient communication: sometimes/never listened, explained, showed respect, spent enough time	86	63	63	55
Patient-centered, timely care score	**78**	**64**	**57**	**51**
Adults—without accessible primary care provider	74	63	68	47
Children—without "medical home"	78	68	65	62
Hospital admissions for ACS conditions	33	60	52	_a
Went to emergency room for condition that could have been treated by regular doctor	56	96	70	64
Duplicate medical tests: doctor ordered test that had already been done	60	65	57	70
Tests results or records not available at time of appointment	67	71	67	70
Coordinated and efficient care score	**65**	**69**	**64**	**61**
Adults (ages 19–64)—time uninsured during the year	75	47	28	_a
Adults (ages 19–64)—access problems because of costs	100	88	46	47

EXHIBIT 6
Performance Indicators For The U.S. Health Care System: Equity (cont.)

Dimension and indicator	White compared to black (%)	White compared to Hispanic (%)	High income compared to low income (%)	Insured compared to uninsured (%)
Families—spent >10% of income or >5% of income, if low income, on OOP medical costs and premiums	_a	_a	9	91
Adults (ages 19–64)—medical bill problems or medical debt	75	100	34	50
Universal participation and affordable care score	**81**	**84**	**29**	**59**
Overall equity dimension score	**76**	**80**	**62**	**66**

SOURCES: See the online technical appendix, http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2.
NOTES: AHRQ is Agency for Healthcare Research and Quality. ACS is ambulatory care–sensitive. OOP is out-of-pocket.
ª Data not available.

scores on coordination and efficiency reveal the extent to which poor access undermines quality and increases costs. Black, Hispanic, low-income, and uninsured patients are less likely than white, higher-income, and insured patients to have primary care providers to coordinate care and are more likely to experience test results/records delays and duplication, go to the ER when other care was not available, and be admitted to the hospital for potentially preventable conditions.

The scorecard equity findings are consistent with recent reports showing significant and sometimes increasing disparities by income, insurance, and race/ethnicity.[28] These three risk factors often coexist: Minorities are more likely than whites to have low incomes, and those with low incomes are more likely than those with higher incomes to be uninsured or underinsured.

Summary And Implications

■ **Overall picture.** The overall picture that emerges from the scorecard is one of missed opportunities and room for improvement. Despite high expenditures, the United States lags behind other countries on indicators of mortality and healthy life expectancy. Within the United States, there is often a substantial spread between the top and bottom groups of states, hospitals, or health plans as well as wide gaps between the national average and top rates. As a result, the U.S. performance relative to benchmarks averages near 50 for efficiency to 70 for healthy lives, quality, access, and equity, for an overall average score of 66 across the main domains of performance (Exhibit 7). On multiple indicators, the United States would need to improve its performance by 50 percent or more to reach benchmark countries, regions, states, hospitals, health plans, or targets.

The indicators and benchmarks selected to span the domains of performance reflect the judgment of the Commission on a High Performance Health System

EXHIBIT 7
Summary Of Scores: Dimensions Of A High-Performance Health Care System
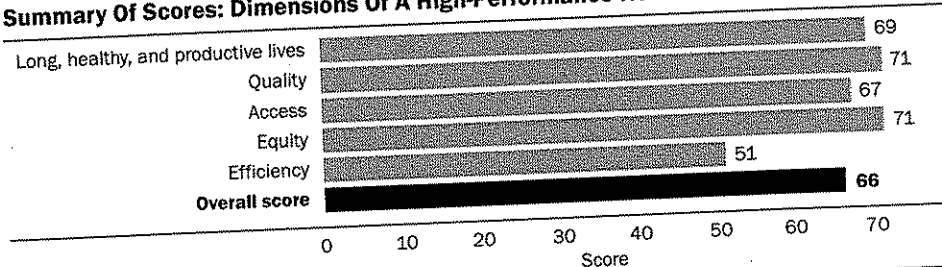
SOURCE: Authors' calculations based on scores in Exhibits 1–6. Quality: average of (1) right care, (2) coordinated care, (3) safe care, and (4) patient-centered, timely care. Equity: average of income, insurance, black, and Hispanic.

and the authors, informed by experts and tempered by data availability. Yet we believe that substituting different indicators or weighting indicators in a different fashion is unlikely to change the basic overall picture.

■ **Interrelatedness of deficits.** This first edition of the scorecard offers a starting point for national discussion. In many cases, desired data to represent an important concept were not available. By necessity, the scorecard includes some indicators for which data were available only with a time lag or for segments of the insured population. Indeed, the absence of good data on critical areas and fragmented sources are symptomatic of lower-than-desirable system performance.

The results provide evidence of the potential net gain from strategies focused simultaneously on improving access, quality, and efficiency. Policies are needed that address the interaction of access, quality, and cost and take a coherent, whole-system view rather than a fragmented approach to change. Universal coverage and participation are essential to improving health care quality and cost performance. High and rising rates of the population that is under- and uninsured destabilize the delivery system, fuel inefficient use of resources, and put families and the nation at risk of losing ground on past gains in health and workforce productivity.

Fragmented and unstable coverage not only increases insurance overhead costs, it also undermines the nation's ability to assess outcomes or costs over time. Medicare is often the only national program with the stability to track outcomes and costs over episodes of care and follow patients over multiple years.

Although the analysis divides performance into access, quality, and efficiency/cost, they are closely interconnected. Lack of access to primary care, poor quality in hospitals and nursing homes or during transitions, and inadequate information systems contribute to duplicate efforts, inefficient use of specialized care, and higher rates of hospital admission and readmission, which raise the costs of care and lead to poorer outcomes.

There is evidence that quality and efficiency can be improved together. Savings can be generated from more efficient use of costly resources, producing the same

or better quality at lower resource cost. The challenge is finding systematic ways to achieve net gains and rechannel the savings into investments to improve coverage and the capacity to innovate. The critical importance of improving coordination of care emerges across multiple indicators. Policies that facilitate and promote more-connected care, linking medical care providers and information in more integrated care systems, will be essential for productivity, efficiency, and quality gains.

■ **Research and data needs.** Improving the yield for the nation's investment in health care requires research and data capacity. The nation underinvests in research on the cost-effectiveness or organization of care as well as information systems. In a $2 trillion health care sector, the federal government spends only an estimated $1.5 billion on health systems research—less than $1 for every $1,000 of national health spending.[29] Even if private investments equal federal levels, spending on system research comes to only 0.14 percent of total spending. Furthermore, in an industry that has usually been quick to adopt new technologies, the adoption of health IT (such as EMRs, CPOE, and computerized decision support) and an infrastructure to foster better communication and coordination between providers has been very slow. Bringing in effective IT for maximum national gain likely requires a critical mass and whole-system approach that spans ambulatory, diagnostic, pharmacy, and inpatient settings.

I N   S U M ,   T H E   S C O R E C A R D   I N D I C A T E S that the United States has broad opportunities to improve. It can do better, given the level of resources it has committed to health care. There is also much risk in failing to act: Cost and coverage vital signs are moving in the wrong direction. To assure a healthy, productive nation, transformation of the health system is of great urgency.

NOTES

1. G.F. Anderson et al., "Health Care Spending and Use of Information Technology in OECD Countries," *Health Affairs* 25, no. 3 (2006): 819–831.
2. P. Fronstin, *Workers' Health Insurance: Trends, Issues, and Options to Expand Coverage*, March 2006, http://www.cmwf.org/usr_doc/Fronstin_workershltins_908.pdf (accessed 13 September 2006).
3. P.S. Hussey et al., "How Does the Quality of Care Compare in Five Countries?" *Health Affairs* 23, no. 3 (2004): 89–99.
4. Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the Twenty-first Century* (Washington: National Academies Press, 2001).
5. Medicare Payment Advisory Commission, "Care Coordination," Chap. 2 in *Report to the Congress: Increasing the Value of Medicare* (Washington: MedPAC, June 2006), 31–56.
6. An online technical appendix lists experts contributing to the scorecard, details data sources, and describes indicators and composites developed for the scorecard. Throughout the discussion of the scorecard results in the text, many factual statements are made that are not directly attributed to specific sources using traditional endnotes, because of space constraints. Unless otherwise specified, sources for these statements are included in the indicator source notes for each exhibit. The appendix is available online at

http://content.healthaffairs.org/cgi/content/full/hlthaff.25.w457/DC2. A chartpack is available from the Commonwealth Fund at http://www.cmwf.org/publications/publications_show.htm?doc_id=401577.

7. Indicators with 100 percent targets include adults with adequate coverage, adults with no medical bills/debt, families spending no more than 10 percent of income on out-of-pocket medical costs and premiums, and population under age sixty-five in states where premiums are less than 15 percent of median household income.

8. Indicator includes seven key preventive care services: blood pressure check, cholesterol screening, pap smear, mammogram, fecal occult blood test or sigmoidoscopy/colonoscopy, and flu shot. See Note 6 for online technical appendix, p. 11.

9. E.A. McGlynn et al., "The Quality of Health Care Delivered to Adults in the United States," *New England Journal of Medicine* 348, no. 26 (2003): 2635–2645.

10. For the list of ten hospital clinical indicators, see the online technical appendix (Note 6), p. 11.

11. MedPAC, *A Data Book: Health Care Spending and the Medicare Program* (Washington: MedPAC, 2005).

12. R.M. Wachter, "The End of the Beginning: Patient Safety Five Years after 'To Err Is Human'," *Health Affairs* 23 (2004): w534–w545 (published online 30 November 2004; 10.1377/hlthaff.w4.534).

13. B. Jarman et al., "Monitoring Changes in Hospital Standardised Mortality Ratios," *British Medical Journal* 330, no. 7487 (2005): 329; and Institute for Healthcare Improvement, *Move Your Dot: Measuring, Evaluating, and Reducing Hospital Mortality Rates* (Cambridge, Mass.: IHI, 2003).

14. Data analysis by Sir Brian Jarman, Imperial College, England. Jarman calculated ratios and potential reductions in mortality. See online technical appendix (Note 6), pp. 12–13.

15. For hospitals providing 2005 data to HCAHPS benchmarking database. Data analysis provided by AHRQ.

16. IOM, *Hidden Costs, Value Lost: Uninsurance in America* (Washington: National Academies Press, 2003).

17. S.R. Collins et al., *Gaps in Health Insurance: An All-American Problem*, April 2006, http://www.cmwf.org/usr_doc/Collins_gapshltins_920.pdf (accessed 12 September 2006).

18. Ibid.; and M. Merlis, D. Gould, and B. Mahato, *Rising Out-of-Pocket Spending for Medical Care: A Growing Strain on Family Budgets*, February 2006, http://www.cmwf.org/usr_doc/Merlis_risingoopspending_887.pdf (accessed 13 September 2006).

19. Calculations by authors based on national costs are from D.T. Kruzikas et al., *Preventable Hospitalizations: A Window into Primary and Preventive Care* (Rockville, Md.: AHRQ, 2004). Costs inflated to 2006.

20. Calculation by authors based on 2003 variations in Medicare ACS rates and reimbursement per discharge.

21. Data analysis by Gerard Anderson, Johns Hopkins University. See online technical appendix (Note 6), p. 15.

22. Calculation by authors based on 2003 variations in Medicare readmission rates and costs per readmission.

23. Data analysis by Elliott Fisher, Dartmouth Medical School. See online technical appendix (Note 6), p. 16; and E. Fisher, "Improving the Efficiency of U.S. Healthcare: Can Pay-for-Performance Help?" (Presentation at the Thirteenth Princeton Conference: Reinventing Health Care Delivery in the Twenty-first Century, 25 May 2006). See also E.S. Fisher et al., "Variations in the Longitudinal Efficiency of Academic Medical Centers," *Health Affairs* 23 (2004): VAR19–VAR32 (published online 7 October 2004; 10.1377/hlthaff.VAR.19).

24. Organization for Economic Cooperation and Development, *OECD Health Data 2005: Statistics and Indicators for Thirty Countries*, CD Database, Version 10/12/2005 (Paris: OECD, 2005).

25. C.W. Burt, E. Hing, and D. Woodhall, "Electronic Medical Record Use by Office-based Physicians: United States, 2005," 3 August 2006, http://www.cdc.gov/nchs/products/pubs/pubd/hestats/electronic/electronic.htm (accessed 29 August 2006).

26. American Hospital Association, *Forward Momentum: Hospital Use of Information Technology* (Chicago: AHA, 2005).

27. A.M. Audet et al., "Measure, Learn, and Improve: Physicians' Involvement in Quality Improvement," *Health Affairs* 24, no. 3 (2005): 843–853.

28. See, for example, AHRQ, *National Healthcare Disparities Report, 2005* (Rockville, Md.: AHRQ, 2005).

29. Coalition for Health Services Research, "Unlocking Secrets to Better Health Care," Testimony before the House Committee on Appropriations, 29 March 2006, http://www.chsr.org/testimony032906.pdf (accessed 29 August 2006).